

Demand, Supply, and Market Equilibrium

Chapter 3 introduces you to the most fundamental tools of economic analysis: demand and supply. Demand and supply are simply “boxes” or categories into which all the forces and factors that affect the price and the quantity of a good bought and sold in a competitive market are placed. Demand and supply determine price and quantity exchanged. It is necessary to understand *why* and *how* they do this.

Many students never learn to *define* demand and supply. They never learn (1) what an increase or decrease in demand or supply means, (2) the important distinctions between “demand” and “quantity demanded” and between “supply” and “quantity supplied,” and (3) the equally important distinctions between a change in demand and a change in quantity demanded, and between a change in supply and a change in quantity supplied.

Having learned these, however, it is no great trick to comprehend the so-called laws of demand and supply. The equilibrium price—that is, the price that will tend to prevail in the market as long as demand and supply do not change—is simply the price at which **quantity demanded** and **quantity supplied** are equal. The quantity bought and sold in the market (the equilibrium quantity) is the quantity demanded and supplied at the equilibrium price. If you can determine the equilibrium price and quantity under one set of demand and supply conditions, you can determine them under any other set.

This chapter includes a brief examination of the factors that determine demand and supply and the ways in which changes in these determinants will affect and cause changes in demand and supply. A graphic method is used in this analysis to illustrate demand and supply, equilibrium price and quantity, changes in demand and supply, and the resulting changes in equilibrium price and quantity. The **demand curve** and the **supply curve** are graphic representations of the same data contained in the schedules of demand and supply.

The application section at the end of the chapter explains government-set prices. When the government sets a legal price in a competitive market, it creates a **price ceiling** or **price floor**. This prevents supply and demand from determining the equilibrium price and quantity of a product that will be provided by a competitive market. As you will learn, the economic consequence of a price ceiling is that it will result in a persistent shortage of the product. An example of a price ceiling would be price controls on apartment rents. A price floor will result in a persistent surplus of a product, and the example given is price supports for an agricultural product.

You will use demand and supply over and over. It will turn out to be as important to you in economics as jet propulsion is to the pilot of an airplane: You can’t get off the ground without it.

■ CHECKLIST

When you have studied this chapter you should be able to

- ☐ Explain the economic meaning of markets.
- ☐ Define demand and state the law of demand.
- ☐ Give three explanations for the inverse relationship between price and quantity demanded.
- ☐ Graph the demand curve when you are given a demand schedule.
- ☐ Explain the difference between individual demand and market demand.
- ☐ List the five major determinants of demand and explain how each one shifts the demand curve.
- ☐ Explain how changes in income affect the demand for normal goods and inferior goods.
- ☐ Explain how changes in the prices of a substitute good or a complementary good affect the demand for a product.
- ☐ Distinguish between change in demand and change in the quantity demanded.
- ☐ Define supply and state the law of supply.
- ☐ Graph the supply curve when given a supply schedule.
- ☐ Explain the difference between individual supply and market supply.
- ☐ List the major determinants of supply and explain how each shifts the supply curve.
- ☐ Distinguish between changes in supply and changes in the quantity supplied.
- ☐ Describe how the equilibrium price and quantity are determined in a competitive market.
- ☐ Define surplus and shortage.
- ☐ Determine, when you are given the demand for and the supply of a good, the equilibrium price and the equilibrium quantity.
- ☐ Explain the meaning of the rationing function of prices.
- ☐ Distinguish between productive efficiency and allocative efficiency.
- ☐ Predict the effects of changes in demand on equilibrium price and quantity.
- ☐ Predict the effects of changes in supply on equilibrium price and quantity.
- ☐ Predict the effects of changes in both demand and supply on equilibrium price and quantity.

- Explain the economic effects of a government-set price ceiling on product price and quantity in a competitive market.
- Describe the economic consequences of a government-set price floor on product price and quantity.

■ CHAPTER OUTLINE

1. A market is any institution or mechanism that brings together buyers ("demanders") and sellers ("suppliers") of a particular good or service. This chapter assumes that markets are highly competitive.

2. **Demand** is a schedule of prices and the quantities that buyers would purchase at each of these prices during a selected period of time.

a. The **law of demand** states that there is an inverse or negative relationship between price and quantity demanded. Other things equal, as price increases, buyers will purchase fewer quantities, and as price decreases they will purchase more quantities. There are three explanations for the law of demand:

- (1) **Diminishing marginal utility:** After a point, consumers get less satisfaction or benefit from consuming more and more units.
- (2) **Income effect.** A higher price for a good decreases the purchasing power of consumers' incomes so they can't buy as much of the good.
- (3) **Substitution effect.** A higher price for a good encourages consumers to search for cheaper substitutes and thus buy less of it.

b. The **demand curve** has a downward slope and is a graphic representation of the law of demand.

c. Market demand for a good is a sum of all the demands of all consumers of that good at each price. Although price has the most important influence on quantity demanded, other factors can influence demand. The factors, called **determinants of demand** are consumer tastes (preferences), the number of buyers in the market, consumers' income, the prices of related goods, and consumer expectations.

d. An increase or decrease in the entire demand schedule and the demand curve (a change in demand) results from a change in one or more of the determinants of demand. For a particular good,

- (1) an increase in *consumer tastes or preferences* increases its demand;
- (2) an increase in *the number of buyers* increases its demand;
- (3) *consumers' income* increases its demand if it is a **normal good** (one where income and demand are positively related), but an increase in consumers' income decreases its demand if it is an **inferior good** (one where income and demand are negatively related);
- (4) an increase in *the price of a related good* will increase its demand if the related good is a **substitute good** (one that can be used in place of another) but an increase in the price of a related good will decrease its demand if the related good is a **complementary good** (one that is used with another good).

(5) an increase in *consumer expectations* of a future price increase or a future rise in income increases its current demand.

e. A **change in demand** means that the entire demand curve or schedule has changed because of a change in one of the above determinants of demand, but a **change in the quantity demanded** means that there has been a movement along an existing demand curve or schedule because of a change in price.

3. **Supply** is a schedule of prices and the quantities that sellers will sell at each of these prices during some period of time.

a. The **law of supply** shows a positive relationship between price and quantity supplied. Other things equal, as the price of the good increases more quantities will be offered for sale, and that as the price of the good decreases, fewer quantities will be offered for sale.

b. The **supply curve** is a graphic representation of supply and the law of supply; it has an upward slope indicating the positive relationship between price and quantity supplied.

c. The market supply of a good is the sum of the supplies of all sellers or producers of the good at each price.

d. Although price has the most important influence on the quantity supplied, other factors can also influence supply. The factors, called **determinants of supply**, are changes in (1) resource prices; (2) technology; (3) taxes and subsidies; (4) prices of other goods; (5) price expectation; and (6) the number of sellers in a market.

e. A **change in supply** is an increase or decrease in the entire supply schedule and the supply curve. It is the result of a change in one or more of the determinants of supply that affect the cost of production. For a particular product,

- (1) a decrease in *resource prices* increases its supply;
- (2) an improvement in technology increases its supply;
- (3) a decrease in *taxes* or an increase in *subsidies* increases its supply;
- (4) a decrease in *the price of another good* that could be produced leads to an increase in its supply;
- (5) an increase in *producer expectations* of higher prices for the good may increase or decrease its supply.
- (6) an increase in the number of sellers or suppliers is likely to increase its supply.

f. A **change in supply** means that the entire supply curve or schedule has changed because of a change in one of the above determinants of supply, but a **change in the quantity supplied** means that there has been a movement along an existing supply curve or schedule because of a change in price.

4. The **equilibrium price** (or **market-clearing price**) of a product is that price at which quantity demanded and quantity supplied are equal. The quantity exchanged in the market (the **equilibrium quantity**) is equal to the quantity demanded and supplied at the equilibrium price.

a. If the price of a product is above the market equilibrium price, there will be a **surplus** or **excess supply**. In this case, the quantity demanded is less than the quantity supplied at that price.

- b. If the price of a product is below the market equilibrium price, there will be a **shortage** or *excess demand*. In this case, the quantity demanded is greater than the quantity supplied at that price.
- c. The rationing function of prices is the elimination of surpluses and shortages of a product.
- d. Competitive markets produce **productive efficiency**, in which the goods and services society desires are being produced in the least costly way. They also create **allocative efficiency**, in which resources are devoted to the production of goods and services society most highly values.
- e. Changes in supply and demand result in changes in the equilibrium price and quantity. The simplest cases are ones where demand changes and supply remains constant, or where supply changes and demand remains constant. More complex cases involve simultaneous changes in supply and demand.
- (1) *Demand changes*. An increase in demand, with supply remaining the same, will increase the equilibrium price and quantity; a decrease in demand with supply remaining the same will decrease the equilibrium price and quantity.
- (2) *Supply changes*. An increase in supply, with demand staying the same, will decrease the equilibrium price and increase the equilibrium quantity; a decrease in supply, with demand staying the same, will increase the equilibrium price and decrease the equilibrium quantity.
- (3) *Complex cases*. These four cases involve changes in demand and supply: both increase; both decrease; one increases and one decreases; and, one decreases and one increases. For the possible effects on the equilibrium price and quantity in the four complex cases, see #4 in "Hints and Tips" section.
5. Supply and demand analysis has many important applications to government-set prices.
- a. A **price ceiling** set by government prevents price from performing its rationing function in a market system. It creates a shortage (quantity demanded is greater than the quantity supplied) at the government-set price.
- (1) Another rationing method must be found, so government often steps in and establishes one. But all rationing systems have problems because they exclude someone.
- (2) A government-set price creates an illegal **black market** for those who want to buy and sell above the government-set price.
- (3) One example of a legal price ceiling that creates a shortage would be rent control established in some cities to restrain the rental price of apartments.
- b. A **price floor** is a minimum price set by government for the sale of a product or resource. It creates a surplus (quantity supplied is greater than the quantity demanded) at the fixed price. The surplus may induce the government to increase demand or decrease supply to eliminate the surplus. The use of price floors has often been applied to agricultural products such as wheat.

6. (Last Word). The supply and demand analysis can be used to understand the shortage of organ transplants. The demand curve for such organs is down-sloping and the supply is fixed (vertical) and left of the zero price on the demand curve. Transplanted organs have a zero price. At that price the quantity demanded is much greater than the quantity supplied creating a shortage that is rationed with a waiting list. A competitive market for organs would increase the price of organs and then make more available for transplant (make the supply curve up-sloping), but there are moral and cost objections to this change.

■ HINTS AND TIPS

1. This chapter is the most important one in the book. Make sure you spend extra time on it and master the material. If you do, your long-term payoff will be a much easier understanding of the applications in later chapters.
2. One mistake students often make is to confuse **change in demand** with **change in quantity demanded**. A change in demand causes the entire demand curve to *shift*, whereas a change in quantity demanded is simply a *movement* along an existing demand curve.
3. It is strongly recommended that you draw supply and demand graphs as you work on supply and demand problems so you can see a picture of what happens when demand shifts, supply shifts, or both demand and supply shift.
4. Make a chart and related graphs that show the eight possible outcomes from changes in demand and supply. Figure 3.7 in the text illustrates the *four single shift* outcomes:

1. D increase: $P \uparrow, Q \uparrow$	3. S increase: $P \downarrow, Q \uparrow$
2. D decrease: $P \downarrow, Q \downarrow$	4. S decrease: $P \uparrow, Q \downarrow$

Four shift combinations are described in Table 3.3 of the text. Make a figure to illustrate each combination.

- | | |
|--|--|
| 1. $S \uparrow, D \downarrow: P \downarrow, Q ?$ | 3. $S \uparrow, D \uparrow: P ?, Q \uparrow$ |
| 2. $S \downarrow, D \uparrow: P \uparrow, Q ?$ | 4. $S \downarrow, D \downarrow: P ?, Q \downarrow$ |

5. Make sure you understand the "other-things-equal" assumption described the Consider This box on salsa and coffee beans (p. 59). It will help you understand why the law of demand is not violated even if the price and quantity of a product increase over time.

6. Practice always helps in understanding graphs. Without looking at the textbook, draw a supply and demand graph with a **price ceiling** below the equilibrium price and show the resulting shortage in the market for a product. Then, draw a supply and demand graph with a **price floor** above the equilibrium price and show the resulting surplus. Explain to yourself what the graphs show. Check your graphs and your explanations by referring to textbook Figures 3.8 and 3.9 and the related explanations.

IMPORTANT TERMS

demand

demand schedule

law of demand

diminishing marginal utility

income effect	law of supply
substitution effect	supply curve
demand curve	determinants of supply
determinants of demand	change in supply
normal goods	change in quantity supplied
inferior goods	equilibrium price
substitute good	equilibrium quantity
complementary good	surplus
change in demand	shortage
change in quantity demanded	productive efficiency
supply	allocative efficiency
supply schedule	price ceiling
	price floor

SELF-TEST

FILL-IN QUESTIONS

1. A market is the institution or mechanism that brings together buyers or (demanders, suppliers) _____ and sellers or _____ of a particular good or service.
2. The relationship between price and quantity in the demand schedule is (a direct, an inverse) _____ relationship; in the supply schedule the relationship is _____ one.
3. The added satisfaction or pleasure a consumer obtains from additional units of a product decreases as the consumer's consumption of the product increases. This phenomenon is called diminishing marginal (equilibrium, utility) _____.
4. A consumer tends to buy more of a product as its price falls because
 - a. The purchasing power of the consumer is increased and the consumer tends to buy more of this product (and of other products); this is called the (income, substitution) _____ effect;
 - b. The product becomes less expensive relative to similar products and the consumer tends to buy more of the original product and less of the similar products, which is called the _____ effect.
5. When demand or supply is graphed, price is placed on the (horizontal, vertical) _____ axis and quantity on the _____ axis.
6. The change from an individual to a market demand schedule involves (adding, multiplying) _____ the quantities demanded by each consumer at the various possible (incomes, prices) _____.
7. When the price of one product and the demand for another product are directly related, the two products are called (substitutes, complements) _____; however, when the price of one product and the demand for another product are inversely related, the two products are called _____.
8. When a consumer demand schedule or curve is drawn up, it is assumed that five factors that determine demand are fixed and constant. These five determinants of consumer demand are
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
9. A decrease in demand means that consumers will buy (larger, smaller) _____ quantities at every price, or will pay (more, less) _____ for the same quantities.
10. A change in income or in the price of another product will result in a change in the (demand for, quantity demanded of) _____ the given product, while a change in the price of the given product will result in a change in the _____ the given product.
11. An increase in supply means that producers will make and be willing to sell (larger, smaller) _____ quantities at every price, or will accept (more, less) _____ for the same quantities.
12. A change in resource prices or the prices of other goods that could be produced will result in a change in the (supply, quantity supplied) _____ of the given product, but a change in the price of the given product will result in a change in the _____.
13. The fundamental factors that determine the supply of any commodity in the product market are
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
 - f. _____
14. The equilibrium price of a product is the price at which quantity demanded is (greater than, equal to) _____ quantity supplied, and there (is, is not) _____ a surplus or a shortage at that price.
15. If quantity demanded is greater than quantity supplied, price is (above, below) _____ the equilibrium price; and the (shortage, surplus) _____ will cause the price to (rise, fall) _____. If quantity

demand is less than the quantity supplied, price is (above, below) _____ the equilibrium price, and the (shortage, surplus) _____ will cause the price to (rise, fall) _____.

16. In the spaces next to a–h, indicate the effect [*increase* (+), *decrease* (–), or *indeterminate* (?)] on equilibrium price (*P*) and equilibrium quantity (*Q*) of each of these changes in demand and/or supply.

P *Q*

- a. Increase in demand, supply constant _____
- b. Increase in supply, demand constant _____
- c. Decrease in demand, supply constant _____
- d. Decrease in supply, demand constant _____
- e. Increase in demand, increase in supply _____
- f. Increase in demand, decrease in supply _____
- g. Decrease in demand, decrease in supply _____
- h. Decrease in demand, increase in supply _____

17. If supply and demand establish a price for a good so that there is no shortage or surplus of the product, then price is successfully performing its (utility, rationing) _____ function. The price that is set is a market- (changing, clearing) _____ price.

18. A competitive market produces two types of efficiency: goods and services will be produced in the least costly way, so there will be (allocative, productive) _____ efficiency; and, resources are devoted to the production of the mix of goods and services society most wants, or there is _____ efficiency.

19. A price ceiling is the (minimum, maximum) _____ legal price a seller may charge for a product or service, whereas a price floor is the _____ legal price set by government.

20. If a price ceiling is below the market equilibrium price, a (surplus, shortage) _____ will arise in a competitive market, and if a price floor is above the market equilibrium price, a (surplus, shortage) _____ will arise in a competitive market.

■ TRUE-FALSE QUESTIONS

Circle *T* if the statement is true, *F* if it is false.

- 1. A market is any arrangement that brings together the buyers and sellers of a particular good or service. **T F**
- 2. Demand is the amount of a good or service that a buyer will purchase at a particular price. **T F**
- 3. The law of demand states that as price increases, other things being equal, the quantity of the product demanded increases. **T F**

4. The law of diminishing marginal utility is one explanation of why there is an inverse relationship between price and quantity demanded. **T F**

5. The substitution effect suggests that, at a lower price, you have the incentive to substitute the more expensive product for similar products which are relatively less expensive. **T F**

6. There is no difference between individual demand schedules and the market demand schedule for a product. **T F**

7. In graphing supply and demand schedules, supply is put on the horizontal axis and demand on the vertical axis. **T F**

8. If price falls, there will be an increase in demand. **T F**

9. If consumer tastes or preferences for a product decrease, the demand for the product will tend to decrease. **T F**

10. An increase in income will tend to increase the demand for a product. **T F**

11. When two products are substitute goods, the price of one and the demand for the other will tend to move in the same direction. **T F**

12. If two goods are complementary, an increase in the price of one will tend to increase the demand for the other. **T F**

13. A change in the quantity demanded means that there has been a change in demand. **T F**

14. Supply is a schedule that shows the amounts of a product a producer can make in a limited time period. **T F**

15. An increase in resource prices will tend to decrease supply. **T F**

16. A government subsidy for the production of a product will tend to decrease supply. **T F**

17. An increase in the prices of other goods that could be made by producers will tend to decrease the supply of the current good that the producer is making. **T F**

18. A change in supply means that there is a movement along an existing supply curve. **T F**

19. A surplus indicates that the quantity demanded is less than the quantity supplied at that price. **T F**

20. If the market price of a product is below its equilibrium price, the market price will tend to rise because demand will decrease and supply will increase. **T F**

21. The rationing function of prices is the elimination of shortages and surpluses. **T F**

22. Allocative efficiency means that goods and services are being produced by society in the least costly way. **T F**

23. If the supply of a product increases and demand decreases, the equilibrium price and quantity will increase. **T F**

24. If the demand for a product increases and the supply of the product decreases, the equilibrium price will increase and equilibrium quantity will be indeterminate. **T F**

25. A price ceiling set by government below the competitive market price of a product will result in a surplus. **T F**

■ MULTIPLE-CHOICE QUESTIONS

Circle the letter that corresponds to the best answer.

1. A schedule that shows the various amounts of a product consumers are willing and able to purchase at each price in a series of possible prices during a specified period of time is called

- (a) supply
- (b) demand
- (c) quantity supplied
- (d) quantity demanded

2. The reason for the law of demand can best be explained in terms of

- (a) supply
- (b) complementary goods
- (c) the rationing function of prices
- (d) diminishing marginal utility

3. Assume that the price of video game players falls. What will most likely happen to the equilibrium price and quantity of video games, assuming this market is competitive?

- (a) Price will increase; quantity will decrease.
- (b) Price will decrease; quantity will increase.
- (c) Price will decrease; quantity will decrease.
- (d) Price will increase; quantity will increase.

4. Given the following individuals' demand schedules for product X, and assuming these are the only three consumers of X, which set of prices and output levels below will be on the market demand curve for this product?

	Consumer 1	Consumer 2	Consumer 3
Price X	Q_{dx}	Q_{dx}	Q_{dx}
\$5	1	2	0
4	2	4	0
3	3	6	1
2	4	8	2
1	5	10	3

- (a) (\$5, 2); (\$1, 10)
- (b) (\$5, 3); (\$1, 18)
- (c) (\$4, 6); (\$2, 12)
- (d) (\$4, 0); (\$1, 3)

5. Which change will decrease the demand for a product?

- (a) a favorable change in consumer tastes
- (b) an increase in the price of a substitute good

- (c) a decrease in the price of a complementary good
- (d) a decrease in the number of buyers

6. The income of a consumer decreases and the consumer's demand for a particular good increases. It can be concluded that the good is

- (a) normal
- (b) inferior
- (c) a substitute
- (d) a complement

7. Which of the following could cause a decrease in consumer demand for product X?

- (a) a decrease in consumer income
- (b) an increase in the prices of goods that are good substitutes for product X
- (c) an increase in the price that consumers expect will prevail for product X in the future
- (d) a decrease in the supply of product X

8. If two goods are substitutes for each other, an increase in the price of one will necessarily

- (a) decrease the demand for the other
- (b) increase the demand for the other
- (c) decrease the quantity demanded of the other
- (d) increase the quantity demanded of the other

9. If two products, A and B, are complements, then

- (a) an increase in the price of A will decrease the demand for B
- (b) an increase in the price of A will increase the demand for B
- (c) an increase in the price of A will have no significant effect on the price of B
- (d) a decrease in the price of A will decrease the demand for B

10. If two products, X and Y, are independent goods, then

- (a) an increase in the price of X will significantly increase the demand for Y
- (b) an increase in the price of Y will significantly increase the demand for X
- (c) an increase in the price of Y will have no significant effect on the demand for X
- (d) a decrease in the price of X will significantly increase the demand for Y

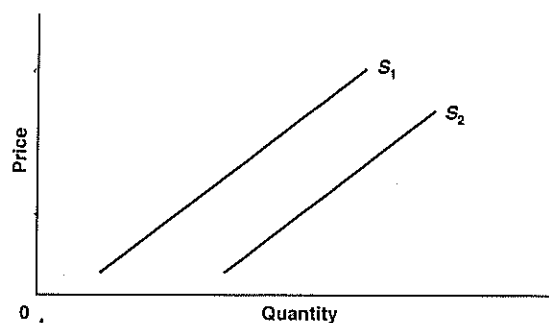
11. The law of supply states that, other things being constant, as price increases

- (a) supply increases
- (b) supply decreases
- (c) quantity supplied increases
- (d) quantity supplied decreases

12. If the supply curve moves from S_1 to S_2 on the graph in the next column, there has been

- (a) an increase in supply
- (b) a decrease in supply

- (c) an increase in quantity supplied
(d) a decrease in quantity supplied



13. A decrease in the supply of a product would most likely be caused by
(a) an increase in business taxes
(b) an increase in consumer incomes
(c) a decrease in resource costs for production
(d) a decrease in the price of a complementary good
14. If the quantity supplied of a product is greater than the quantity demanded for a product, then
(a) there is a shortage of the product
(b) there is a surplus of the product
(c) the product is a normal good
(d) the product is an inferior good
15. If the price of a product is below the equilibrium price, the result will be
(a) a surplus of the good
(b) a shortage of the good
(c) a decrease in the supply of the good
(d) an increase in the demand for the good
16. Which would be the best example of allocative efficiency? When society devoted resources to the production of
(a) slide rules instead of handheld calculators
(b) horse-drawn carriages instead of automobiles
(c) computers with word processors instead of typewriters
(d) long-playing records instead of compact discs

Answer Questions 17, 18, and 19 on the basis of the data in the following table. Consider the following supply and demand schedules for bushels of corn.

Price	Quantity demanded	Quantity Supplied
\$20	395	200
22	375	250
24	350	290
26	320	320
28	280	345
30	235	365

17. The equilibrium price in this market is
(a) \$22
(b) \$24

- (c) \$26
(d) \$28

18. An increase in the cost of labor lowers the quantity supplied by 65 bushels at each price. The new equilibrium price would be

- (a) \$22
(b) \$24
(c) \$26
(d) \$28

19. If the quantity demanded at each price increases by 130 bushels, then the new equilibrium quantity will be

- (a) 290
(b) 320
(c) 345
(d) 365

20. A decrease in supply and a decrease in demand will
(a) increase price and decrease the quantity exchanged

- (b) decrease price and increase the quantity exchanged

(c) increase price and affect the quantity exchanged in an indeterminate way

(d) affect price in an indeterminate way and decrease the quantity exchanged

21. An increase in demand and a decrease in supply will

- (a) increase price and increase the quantity exchanged

(b) decrease price and decrease the quantity exchanged

(c) increase price and the effect upon quantity exchanged will be indeterminate

(d) decrease price and the effect upon quantity exchanged will be indeterminate

22. An increase in supply and an increase in demand will

- (a) increase price and increase the quantity exchanged

(b) decrease price and increase the quantity exchanged

(c) affect price in an indeterminate way and decrease the quantity exchanged

(d) affect price in an indeterminate way and increase the quantity exchanged

23. A cold spell in Florida devastates the orange crop. As a result, California oranges command a higher price. Which of the following statements best explains the situation?

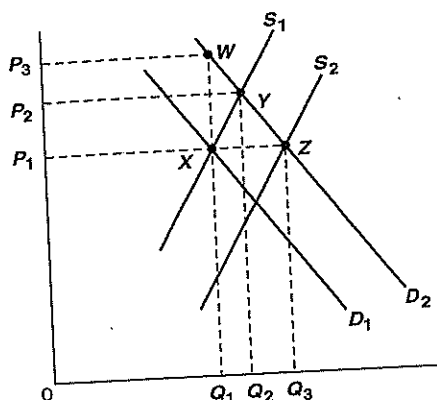
(a) The supply of Florida oranges decreases, causing the supply of California oranges to increase and their price to increase.

(b) The supply of Florida oranges decreases, causing their price to increase and the demand for California oranges to increase.

(c) The supply of Florida oranges decreases, causing the supply of California oranges to decrease and their price to increase.

(d) The demand for Florida oranges decreases, causing a greater demand for California oranges and an increase in their price.

Answer Questions 24, 25, 26, and 27 based on the following graph showing the market supply and demand for a product.



24. Assume that the market is initially in equilibrium where D_1 and S_1 intersect. If there is an increase in the number of buyers, then the new equilibrium would most likely be at point

- (a) W
- (b) X
- (c) Y
- (d) Z

25. Assume that the equilibrium price and quantity in the market are P_2 and Q_2 . Which factor would cause the equilibrium price and quantity to shift to P_1 and Q_3 ?

- (a) an increase in product price
- (b) an increase in demand
- (c) an increase in supply
- (d) a decrease in quantity

26. What would cause a shift in the equilibrium price and quantity from point Z to point X?

- (a) a decrease in production costs and more favorable consumer tastes for the product
- (b) an increase in the number of suppliers and an increase in consumer incomes
- (c) an increase in production costs and a decrease in consumer incomes
- (d) an improvement in production technology and a decrease in the price of a substitute good

27. Assume that the market is initially in equilibrium where D_1 and S_1 intersect. If consumer incomes increased and the technology for making the product improved, then new equilibrium would most likely be at

- (a) P_1 and Q_1
- (b) P_2 and Q_2
- (c) P_1 and Q_3
- (d) P_3 and Q_1

28. The demand curve and its inverse relationship between price and quantity demanded is based on the assumption of

- (a) other things equal
- (b) complementary goods
- (c) increasing marginal utility
- (d) changing consumer expectations

Questions 29 and 30 relate to the following table that shows a hypothetical supply and demand schedule for a product.

Quantity demanded (pounds)	Price (per pound)	Quantity supplied (pounds)
200	\$4.40	800
250	4.20	700
300	4.00	600
350	3.80	500
400	3.60	400
450	3.40	300
500	3.20	200

29. A shortage of 150 pounds of the product will occur if a government-set price is established at

- (a) \$3.20
- (b) \$3.40
- (c) \$3.80
- (d) \$4.00

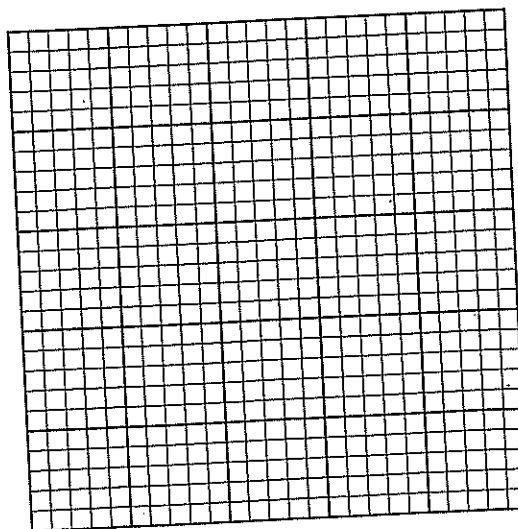
30. If a price floor set by the government is established at \$4.20, there will be a

- (a) surplus of 300 pounds
- (b) shortage of 300 pounds
- (c) surplus of 450 pounds
- (d) shortage of 450 pounds

PROBLEMS

1. Using the demand schedule below, plot the demand curve on the graph below the schedule. Label the axes and indicate for each axis the units being used to measure price and quantity.

Price	Quantity demanded 1000 bushels of soybeans
\$7.20	10
7.00	15
6.80	20
6.60	25
6.40	30
6.20	35



a. Plot the following supply schedule on the same graph.

Price	Quantity demanded 1000 bushels of soybeans
\$7.20	40
7.00	35
6.80	30
6.60	25
6.40	20
6.20	15

- b. The equilibrium price of soybeans will be \$_____.
- c. How many thousand bushels of soybeans will be exchanged at this price? _____
- d. Indicate clearly on the graph the equilibrium price and quantity by drawing lines from the intersection of the supply and demand curves to the price and quantity axes.
- e. If the Federal government supported a price of \$7.00 per bushel there would be a (shortage, surplus) _____ of _____ bushels of soybeans.

2. The demand schedules of three individuals (Ellie, Sam, and Lynn) for loaves of bread are shown in the following table. Assuming there are only three buyers of bread, determine and graph the total or market demand schedule for bread.

Price	Quantity demanded, loaves of bread			Total
	Ellie	Sam	Lynn	
\$1.50	1	4	0	_____
1.40	3	5	1	_____
1.30	6	6	5	_____
1.20	10	7	10	_____
1.10	15	8	16	_____

3. Following is a demand schedule for bushels of apples. In columns 3 and 4 insert any new figures for quantity that represent in column 3 an increase in demand and in column 4 a decrease in demand.

(1) Price	(2) Quantity demanded	(3) Demand increases	(4) Demand decreases
\$6.00	400	_____	_____
5.90	500	_____	_____
5.80	600	_____	_____
5.70	700	_____	_____
5.60	800	_____	_____
5.50	900	_____	_____

4. Assume that O'Rourke has, when his income is \$100 per week, the demand schedule for good A shown in columns 1 and 2 of the following table and the demand schedule for good B shown in columns 4 and 5. Assume that the prices of A and B are \$.80 and \$5, respectively.

Demand for A (per week)			Demand for B (per week)		
(1) Price	(2) Quantity demanded	(3) Quantity demanded	(4) Price	(5) Quantity demanded	(6) Quantity demanded
\$.90	10	0	\$5.00	4	7
.85	20	10	4.50	5	8
.80	30	20	4.00	6	9
.75	40	30	3.50	7	10
.70	50	40	3.00	8	11
.65	60	50	2.50	9	12
.60	70	60	2.00	10	13

- a. How much A will O'Rourke buy? _____
- How much B? _____
- b. Suppose that as a consequence of a \$10 increase in O'Rourke's weekly income, the quantities demanded of A become those shown in column 3 and the quantities demanded of B become those shown in column 6.
- (1) How much A will he now buy? _____
- How much B? _____
- (2) Good A is (normal, inferior) _____.
- (3) Good B is _____.

5. The market demand for good X is shown in columns 1 and 2 of the following table. Assume the price of X to be \$2 and constant.

(1) Price	(2) Quantity demanded	(3) Quantity demanded	(4) Quantity demanded
\$2.40	1600	1500	1700
2.30	1650	1550	1750
2.20	1750	1650	1850
2.10	1900	1800	2000
2.00	2100	2000	2200
1.90	2350	2250	2450
1.80	2650	2550	2750

- a. If as the price of good Y rises from \$1.25 to \$1.35, the quantities demanded of good X become those shown in column 3, it can be concluded that X and Y are (substitute, complementary) _____ goods.
- b. If as the price of good Y rises from \$1.25 to \$1.35, the quantities of good X become those shown in column 4, it can be concluded that X and Y are _____ goods.

6. The existing demand and supply schedules are given in columns 1, 2, and 3 of the following table.

Demand and Supply Schedules			New Demand and Supply Schedules		
(1) Price	(2) Quantity demanded	(3) Quantity supplied	(4) Price	(5) Quantity demanded	(6) Quantity supplied
\$5.00	10	50	\$5.00	_____	_____
4.00	20	40	4.00	_____	_____
3.00	30	30	3.00	_____	_____
2.00	40	20	2.00	_____	_____
1.00	50	10	1.00	_____	_____

a. Now the demand *increases* by 10 units at each price and supply *decreases* by 10 units. Enter the new amounts for quantity demanded and quantity supplied in columns 5 and 6.

b. What was the old equilibrium price? _____

What will be the new equilibrium price? _____

c. What was the old equilibrium quantity? _____

What will be the new equilibrium quantity? _____

7. In a local market for hamburger on a given date, each of 300 identical sellers of hamburger has the following supply schedule.

(1) Price	(2) Quantity supplied— one seller, lbs	(3) Quantity supplied— all sellers, lbs
\$2.05	150	_____
2.00	110	_____
1.95	75	_____
1.90	45	_____
1.85	20	_____
1.80	0	_____

a. In column 3 construct the market supply schedule for hamburger.

b. Following is the market demand schedule for hamburger on the same date and in the same local market as that given above.

Price	Quantity demanded, lbs
\$2.05	28,000
2.00	31,000
1.95	36,000
1.90	42,000
1.85	49,000
1.80	57,000

If the federal government sets a price on hamburger of \$1.90 a pound, the result would be a (shortage, surplus)

_____ of _____ pounds of hamburger in this market.

8. Each of the following events would tend to increase or decrease either the demand for or the supply of electronic games and, as a result, will increase or decrease the price of these games. In the first blank indicate the effect on demand or supply (increase, decrease); in the second blank, indicate the effect on price (increase, decrease). Assume that the market for electronic games is a competitive one.

a. It becomes known by consumers that there is going to be a major sale on these games one month from now.
_____;

b. The workers in the electronic games industry receive a \$3 an hour wage increase. _____;

c. It is announced by a respected research institute that children who play electronic games also

improve their grades in school. _____;

d. Because of an increase in productivity, the amount of labor necessary to produce a game decreases.
_____;

e. The consumers who play these games believe that a shortage of the games is developing in the economy.
_____;

f. The federal government imposes a \$5 tax per game on the manufacturers of the electronic games.
_____;

■ SHORT ANSWER AND ESSAY QUESTIONS

1. Define demand and the law of demand.

2. Use the diminishing marginal utility concept to explain why the quantity demanded of a product will tend to rise when the price of the product falls.

3. In past decades, the price of coffee in the United States rose significantly as a result of bad weather in coffee-producing regions. Use the income effect and the substitution effect concepts to explain why the quantity of coffee demanded in the United States significantly decreased.

4. What is the difference between individual demand and market demand? What is the relationship between these two types of demand?

5. Explain the difference between an increase in demand and an increase in the quantity demanded.

6. What are the factors that cause a change in demand? Use supply and demand graphs to illustrate what happens to price and quantity when demand increases.

7. How are inferior and normal (or superior) goods defined? What is the relationship between these goods and changes in income?

8. Why does the effect of a change in the price of related goods depend on whether a good is a substitute or complement? What are substitutes and complements?

9. A newspaper reports that "blue jeans have become even more popular and are now the standard clothing that people wear for both play and work." How will this change affect the demand for blue jeans? What will happen to the price and quantity of blue jeans sold in the market? Explain and use a supply and demand graph to illustrate your answer.

10. Compare and contrast the supply schedule with the demand schedule.

11. Supply does not remain constant for long because the factors that determine supply change. What are these factors? How do changes in them affect supply?

12. Explain the difference between an increase in supply and an increase in the quantity supplied.

13. Describe and illustrate with a supply and demand graph the effect of an increase in supply on price and quantity. Do the same for a decrease in supply.

14. The U.S. Congress passes a law that raises the excise tax on gasoline by \$1 per gallon. What effect will this change have on the demand and supply of gasoline? What will happen to gasoline prices and quantity? Explain and use a supply and demand graph to illustrate your answer.

15. Given the demand for and the supply of a commodity, what price will be the equilibrium price of this commodity? Explain why this price will tend to prevail in the market and why higher (lower) prices, if they do exist temporarily, will tend to fall (rise).

16. What is the relationship between the price of a product and a shortage of the product? What is the relationship between the price of a product and a surplus of the product?

17. Explain why competition implies both productive efficiency and allocative efficiency.

18. Analyze the following quotation and explain the fallacies contained in it: "An increase in demand will cause price to rise; with a rise in price, supply will increase and the increase in supply will push price down. Therefore, an increase in demand results in little change in price because supply will increase also."

19. What are the consequences of a price ceiling for a product if it is set below the equilibrium price? Illustrate your answer with a graph.

20. What are the economic problems with price floors? How have they been used by government?

16. a. +, +; b. -, +; c. -, -; d. +, -; e. ?, +; f. +, ?; g. ?, -; h. -, ?

17. rationing, clearing

18. productive, allocative

19. maximum, minimum

20. shortage, surplus

TRUE-FALSE QUESTIONS

- | | | |
|-----------------|------------------|------------------|
| 1. T, p. 46 | 10. T, pp. 49-50 | 19. T, pp. 54-55 |
| 2. F, p. 46 | 11. T, p. 50 | 20. F, pp. 55-56 |
| 3. F, p. 47 | 12. F, p. 50 | 21. T, p. 56 |
| 4. T, p. 47 | 13. F, p. 51 | 22. F, pp. 56-57 |
| 5. F, p. 47 | 14. F, p. 51 | 23. F, pp. 57-58 |
| 6. F, pp. 47-48 | 15. T, pp. 52-53 | 24. T, pp. 57-58 |
| 7. F, pp. 46-47 | 16. F, p. 53 | 25. F, p. 59 |
| 8. F, pp. 48-49 | 17. T, p. 53 | |
| 9. T, p. 49 | 18. F, pp. 52-54 | |

MULTIPLE-CHOICE QUESTIONS

- | | | |
|-----------------|------------------|------------------|
| 1. b, p. 46 | 11. c, p. 51 | 21. c, pp. 57-58 |
| 2. d, p. 47 | 12. a, pp. 51-53 | 22. d, pp. 57-58 |
| 3. d, pp. 54-56 | 13. a, pp. 52-53 | 23. b, pp. 57-58 |
| 4. b, p. 48 | 14. b, pp. 54-55 | 24. c, pp. 57-58 |
| 5. d, pp. 49-50 | 15. b, pp. 54-55 | 25. c, pp. 57-58 |
| 6. b, pp. 49-50 | 16. c, pp. 56-57 | 26. c, pp. 57-58 |
| 7. a, pp. 49-50 | 17. c, pp. 54-55 | 27. c, pp. 57-58 |
| 8. b, p. 50 | 18. d, pp. 52-55 | 28. a, p. 46 |
| 9. a, p. 50 | 19. d, pp. 54-55 | 29. b, p. 59 |
| 10. c, p. 50 | 20. d, pp. 57-58 | 30. c, pp. 61-62 |

PROBLEMS

- a. graph; b. 6.60; c. 25,000; d. graph; e. surplus, 20,000
- Total: 5, 9, 17, 27, 39
- Each quantity in column 3 is greater than in column 2, and each quantity in column 4 is less than in column 2.
- a. 30, 4; b. (1) 20, 7; (2) inferior; (3) normal (superior)
- a. complementary; b. substitute
- a. column 5 (quantity demanded): 20, 30, 40, 50, 60; column 6 (quantity supplied): 40, 30, 20, 10, 0; b. \$3.00, \$4.00; c. 30, 30
- a. 45,000; 33,000; 22,500; 13,500; 6,000; 0; b. shortage, 28,500
- a. decrease demand, decrease price; b. decrease supply, increase price; c. increase demand, increase price; d. increase supply, decrease price; e. increase demand, increase price; f. decrease supply, increase price

SHORT ANSWER AND ESSAY QUESTIONS

- | | | |
|--------------|-------------------|---------------|
| 1. pp. 46-47 | 8. p. 50 | 15. pp. 54-55 |
| 2. p. 47 | 9. pp. 48-49 | 16. pp. 54-56 |
| 3. p. 47 | 10. pp. 46-47, 51 | 17. pp. 56-57 |
| 4. p. 48 | 11. pp. 52-54 | 18. pp. 57-58 |
| 5. p. 51 | 12. pp. 52-54 | 19. pp. 59-61 |
| 6. p. 50 | 13. pp. 57-58 | 20. pp. 61-62 |
| 7. pp. 49-50 | 14. pp. 57-58 | |

ANSWERS

Chapter 3 Demand, Supply, and Market Equilibrium

FILL-IN QUESTIONS

- demanders, suppliers
- an inverse, a direct
- utility
- a. income; b. substitution
- vertical, horizontal
- adding, prices
- substitutes, complements
- a. the tastes or preferences of consumers; b. the number of consumers in the market; c. the money income of consumers; d. the prices of related goods; e. consumer expectations with respect to future prices and income (any order for a-e)
- smaller, less
- demand for, quantity demanded of
- larger, less
- supply, quantity supplied
- a. the technology of production; b. resource prices; c. taxes and subsidies; d. prices of other goods; e. producer expectations of price; f. the number of sellers in the market (any order for a-f)
- equal to, is not
- below, shortage, rise, above, surplus, fall

Additional Examples of Supply and Demand

The first section of the appendix gives more examples of the effects of **changes in supply and demand** on price and quantity. You first will read about simple changes in which either the demand curve changes or the supply curve changes, but not both. These simple changes result in predictable effects on the price and quantity of a product, such as lettuce or corn. Then you are given examples of complex changes, using pink salmon, gasoline, and sushi. In these cases, there is a simultaneous shift in supply and demand. Here the effect of changes in supply and demand on price and quantity will be less certain and will depend on the direction and extent of the changes.

The appendix then extends your understanding of what happens in markets if **pre-set prices** are above or below the equilibrium price. You have already learned that when the government intervenes in a competitive market and sets the price below equilibrium (a price ceiling), it creates a shortage of a product. Similarly, when government sets a price above the equilibrium price (a price floor), it will result in a surplus. As you will learn, shortages and surpluses can also occur in competitive markets when sellers set the price in advance of sales and that pre-set price turns out to be below or above the equilibrium or actual price. The examples given in the text are ticket prices for sporting events that are priced too low or too high by the sellers, resulting in shortages and surpluses.

Supply and demand analysis is one of the most important means for improving your understanding of the economic world. If you master its use, it will help you explain many events and outcomes in everyday life. This appendix helps you achieve that mastery and understanding.

■ APPENDIX CHECKLIST

When you have studied this appendix you should be able to

- ☐ Explain and graph the effect of a decrease in the supply of a product (lettuce) on its equilibrium price and quantity.
- ☐ Describe and graph the effect of an increase in the demand for a product (corn) on its equilibrium price and quantity.
- ☐ Discuss and graph the effects of an increase in the supply of and a decrease in demand for a product (pink salmon) on its equilibrium price and quantity.

- ☐ Predict and graph the effects of a decrease in the supply of and an increase in the demand for a product (gasoline) on its equilibrium price and quantity.
- ☐ Explain and graph the effects of an equal increase in the supply of and demand for a product (sushi) on its equilibrium price and quantity.
- ☐ Discuss and graph how a seller price for a service (Olympic figure skating finals) that is set below the equilibrium price will result in a shortage.
- ☐ Describe and graph how a seller price for a service (Olympic curling preliminaries) that is set above the equilibrium price will result in a surplus.

■ APPENDIX OUTLINE

1. **Changes in supply and demand** result in changes in the equilibrium price and quantity. The simplest cases are ones where demand changes and supply remains constant, or where supply changes and demand remains constant. More complex cases involve simultaneous changes in supply and demand.

a. **Supply increase.** In a competitive market for lettuce, if a severe freeze destroys a portion of the lettuce crop, then the supply of lettuce will decrease. The decrease in the supply of lettuce, with demand remaining the same, will increase the equilibrium price and decrease the equilibrium quantity.

b. **Demand increase.** In a competitive market for corn, an increase in the demand for ethanol will increase the demand for corn because corn is used to make ethanol. This increase in the demand for corn, with supply remaining the same, will increase the equilibrium price and quantity of corn.

c. **Supply increase and demand decrease.** Over the years, improved fishing techniques and technology contributed to an increase in the supply of pink salmon. Also, an increase in consumer incomes and a lowering of the price of substitute fish contributed to reducing the demand for pink salmon. As a result the price of pink salmon fell. The equilibrium quantity could have increased, decreased, or stayed the same. In this case, the increase in supply was greater than the decrease in demand, so the equilibrium quantity increased.

d. **Demand increase and supply decrease.** An increase in the price of oil, a resource used to produce gasoline, resulted in a decrease in the supply of gasoline. At the same time, rising incomes and a stronger economy

created a greater demand for gasoline. This decrease in supply and increase in demand increased the equilibrium price. The equilibrium quantity could have increased, decreased, or stayed the same. In this case, the decrease in supply was less than the increase in demand, so the equilibrium quantity increased.

e. *Demand increase and supply increase.* An increase in the taste for sushi among U.S. consumers resulted in an increase in the demand for this product. At the same time, there was an increase in the number of sushi bars and other food outlets that provide sushi, thus increasing its supply. This increase in both demand and supply increased the equilibrium quantity of sushi. The equilibrium price could have increased, decreased, or stayed the same. In this case, the increase in demand was the same as the increase in supply, so the equilibrium price remained the same.

2. **Pre-set prices** that the seller establishes below or above the equilibrium price can produce shortages and surpluses. If a price is set below the equilibrium price by a seller, then at that pre-set price the quantity demanded is greater than the quantity supplied, resulting in a **shortage**. If a price is set above the equilibrium price by a seller, then at that pre-set price the quantity demanded is less than the quantity supplied, resulting in a **surplus**.

a. The shortage is typical of the market for tickets to more popular sporting events such as Olympic figure skating finals. The shortage of tickets at the pre-set price creates a secondary market (*black market*) for tickets in which buyers bid for tickets held by the initial purchaser. The ticket scalping drives up the price of tickets.

b. The surplus is typical of the market for tickets to less popular sporting events such as Olympic curling preliminaries at which there are many empty seats.

■ HINTS AND TIPS

1. This appendix offers applications and extensions of Chapter 3 in the textbook, so check your understanding of the corresponding text and appendix sections: (a) Review the Chapter 3 section on "Changes in Supply, Demand, and Equilibrium" (pp. 57–59) before reading the Web appendix section on "Changes in Supply and Demand"; and (b) review the text Chapter 3 section on "Application: Government-Set Prices" (pp. 59–62) before reading the appendix section on "Pre-Set Prices."

2. Correct terminology is important for mastering supply and demand analysis. You must remember the distinction between a change in demand and a change in quantity demanded or a change in supply and a change in quantity supplied. Consider the case of a single shift in demand with supply staying the same. As the demand curve increases along the existing supply curve, it increases the quantity supplied, but it does not increase supply (which would be a shift in the entire supply curve).

SELF-TEST

■ FILL-IN QUESTIONS

1. A decrease in the supply of lettuce will result in an equilibrium price that (increases, decreases) _____ and an equilibrium quantity that _____.
2. An increase in the demand for corn will result in an equilibrium price that (increases, decreases) _____ and an equilibrium quantity that _____.
3. An increase in the price of corn resulted in an increase in the (demand for, supply of) _____ farmland in the corn belt and a decrease in the _____ corn-fed beef.
4. An increase in the supply of pink salmon that is greater than the decrease in the demand for pink salmon will result in an equilibrium price that (increases, decreases, stays the same) _____ and an equilibrium quantity that _____.
5. An increase in the demand for gasoline that is greater than the decrease in the supply of gasoline will result in an equilibrium price that (increases, decreases, stays the same) _____ and an equilibrium quantity that _____.
6. A large increase in the price of gasoline is most likely to (increase, decrease) _____ the demand for low-gas-mileage SUVs and trucks and _____ the demand for high-gas-mileage hybrid cars.
7. An increase in the demand for sushi that is equal to the increase in the supply of sushi will result in an equilibrium price that (increases, decreases, stays the same) _____ and an equilibrium quantity that _____.
8. If government sets a legal price for a product, a shortage would arise from a price (ceiling, floor) _____ and a surplus would arise from a price _____.
9. If a pre-set price is set by the seller below the equilibrium price it will create a (surplus, shortage) _____, but if a pre-set price is set by the seller above the equilibrium price it will create a _____.
10. A market for tickets to popular sporting events in which buyers bid for tickets held by initial purchasers is referred to as a (primary, secondary) _____ market. In these markets, ticket (destruction, scalping) _____ occurs.

■ TRUE-FALSE QUESTIONS

Circle T if the statement is true, F if it is false.

1. An increase in the supply of lettuce decreases its equilibrium price and increases its equilibrium quantity. T F

2. A decrease in the demand for tomatoes increases the equilibrium price and decreases the equilibrium quantity. T F

3. When demand for corn increases, there is an increase in the quantity supplied as the equilibrium price rises, but no increase in supply. T F

4. In the market for pink salmon, the reason that the equilibrium quantity increased was that the increase in supply was greater than the decrease in demand. T F

5. In a market for beef, the equilibrium quantity will increase when the increase in supply is greater than the increase in demand. T F

6. In the market for sushi, an equal increase in supply and demand will increase the equilibrium price, but have no effect on the equilibrium quantity. T F

7. In a market for flat-screen TVs, an increase in supply that is greater than the increase in demand will result in a lower equilibrium price. T F

8. If a seller pre-sets a price that turns out to be below the actual equilibrium price, a shortage will develop in the market. T F

9. Ticket scalping often occurs in markets where there is a surplus of tickets. T F

10. If a sporting event is not sold out, this indicates that the ticket prices for the event were pre-set above the actual equilibrium price. T F

■ MULTIPLE-CHOICE QUESTIONS

Circle the letter that corresponds to the best answer.

1. Bad weather in coffee-producing regions of the world devastated the coffee crop. As a result, coffee prices increased worldwide. Which of the following statements best explains the situation?

- (a) The demand for coffee increased.
- (b) The supply of coffee decreased.
- (c) The demand for coffee increased and the supply of coffee increased.
- (d) The demand for coffee decreased and the supply of coffee decreased.

2. Assume that the supply of tomatoes in a competitive market increases. What will most likely happen to the equilibrium price and quantity of tomatoes?

- (a) Price will increase; quantity will decrease
- (b) Price will decrease; quantity will increase
- (c) Price will decrease; quantity will decrease
- (d) Price will increase; quantity will increase

3. Assume that the demand for security services increases in a competitive market. What will most likely happen to the equilibrium price and quantity of security services?

- (a) price will increase; quantity will decrease
- (b) price will decrease; quantity will increase
- (c) price will decrease; quantity will decrease
- (d) price will increase; quantity will increase

4. A decrease in the demand for beef is more than offset by an increase in its supply. As a result the equilibrium price will

- (a) increase and the equilibrium quantity will decrease
- (b) increase and the equilibrium quantity will increase
- (c) decrease and the equilibrium quantity will decrease
- (d) decrease and the equilibrium quantity will increase

5. A decrease in the supply of oil is more than offset by an increase in its demand. As a result, the equilibrium price will

- (a) increase and the equilibrium quantity will decrease
- (b) increase and the equilibrium quantity will increase
- (c) decrease and the equilibrium quantity will decrease
- (d) decrease and the equilibrium quantity will increase

6. An increase in the demand for lumber that is less than the increase in the supply of lumber will

- (a) increase the equilibrium price and quantity of lumber
- (b) decrease the equilibrium price and quantity of lumber
- (c) increase the equilibrium price and decrease the equilibrium quantity of lumber
- (d) decrease the equilibrium price and increase the equilibrium quantity of lumber

7. What will happen to the equilibrium quantity and price of a product in a competitive market when there is an equal increase in demand and supply?

- (a) equilibrium quantity and price will both increase
- (b) equilibrium quantity and price will both decrease
- (c) equilibrium quantity will increase and equilibrium price will stay the same
- (d) equilibrium quantity will stay the same and equilibrium price will increase

8. What will happen to the equilibrium quantity and price of a product in a competitive market when the decrease in demand exactly offsets the increase in supply?

- (a) equilibrium quantity will increase and equilibrium price will decrease
- (b) equilibrium quantity will decrease and equilibrium price will increase
- (c) equilibrium quantity will increase and equilibrium price will stay the same
- (d) equilibrium quantity will stay the same and equilibrium price will decrease

9. Which of the following is a correct statement?

- (a) price ceilings increase supply
- (b) price ceilings create shortages
- (c) price floors create shortages
- (d) price floors increase demand

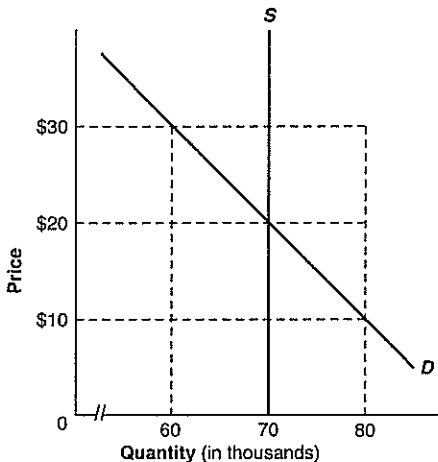
10. If a seller sets a price for a product that turns out to be below the equilibrium price, then there will be a

- (a) shortage of the product
- (b) surplus of the product
- (c) price floor for a product
- (d) a zero price for the product

11. A surplus means that

- (a) demand for a product is greater than the supply
- (b) supply of the product is greater than the demand
- (c) quantity demanded is less than the quantity supplied at that price
- (d) quantity demanded is greater than the quantity supplied at that price

Answer Questions 12, 13, and 14 based on the following graph showing the market supply and demand for a product.



12. Given this market, if a seller pre-sets the price at \$10, then this action results in a

- (a) surplus of 10,000 units
- (b) surplus of 80,000 units
- (c) shortage of 10,000 units
- (d) shortage of 80,000 units

13. Given this market, if a seller pre-sets the price at \$30, then this action results in a

- (a) surplus of 10,000 units
- (b) surplus of 60,000 units
- (c) surplus of 70,000 units
- (d) shortage of 10,000 units

14. What price will eliminate a surplus or shortage in this market

- (a) \$0
- (b) \$10
- (c) \$20
- (d) \$30

15. A market for tickets in which buyers bid for tickets held by initial purchasers rather than the original seller is a

- (a) primary market
- (b) secondary market
- (c) pre-set market
- (d) surplus market

PROBLEMS

1. The existing demand and supply schedules are given in columns 1, 2, and 3 of the following table.

Demand and Supply Schedules			New Demand and Supply Schedules		
(1) Price	(2) Quantity demanded	(3) Quantity supplied	(4) Price	(5) Quantity demanded	(6) Quantity supplied
\$5.00	10	50	\$5.00		
4.00	20	40	4.00		
3.00	30	30	3.00		
2.00	40	20	2.00		
1.00	50	10	1.00		

Now the demand *increases* by 10 units at each price and supply *decreases* by 10 units. Enter the new amounts for quantity demanded and quantity supplied in columns 5 and 6.

a. What was the old equilibrium price? _____

What will be the new equilibrium price? _____

b. What was the old equilibrium quantity? _____

What will be the new equilibrium quantity? _____

2. The demand and supply schedules for a certain product are those given in the following table. Answer the related questions.

Quantity demanded	Price	Quantity supplied
12,000	\$10	18,000
13,000	9	17,000
14,000	8	16,000
15,000	7	15,000
16,000	6	14,000
17,000	5	13,000
18,000	4	12,000

The equilibrium price of the product is \$ _____

and the equilibrium quantity is _____.

a. If a seller established a pre-set price of \$5 on this product, there would be a (shortage, surplus) _____ of _____ units.

b. If a seller established a pre-set price of \$8, there would be a (shortage, surplus) _____ of _____ units.

SHORT ANSWER AND ESSAY QUESTIONS

1. Explain, using a supply and demand graph, how a freeze in a vegetable crop will affect the equilibrium price and quantity.

2. In a competitive market, if the supply of a product decreases and demand remains the same, what happens to the quantity demanded?

3. When there are single shifts in the supply or demand curve, you can predict the effects on both equilibrium price and quantity. When there are simultaneous shifts in demand and supply you can make only one prediction of the effects with any certainty. Why?

4. You observe that the equilibrium price has decreased and the equilibrium quantity has increased. What supply and demand conditions would best explain this outcome?

5. If increase in the demand for gasoline outweighs the decrease in the supply of gasoline, what is the most likely effect on the equilibrium price and quantity? Explain and show your answer with a graph.

6. You observe that the equilibrium quantity has increased but the equilibrium price has stayed the same. What supply and demand conditions would best explain this outcome?

7. What are price ceilings and price floors?

8. What are the consequences if a seller sets a price below the actual equilibrium price?

9. Why do secondary markets arise? Give examples of such markets.

10. Explain, using a supply and demand graph, the situation that arises when there are many unsold tickets to a sporting event. Why does this occur?

ANSWERS

Appendix to Chapter 3 Additional Examples of Supply and Demand

FILL-IN QUESTIONS

1. increases, decreases
2. increases, increases
3. demand for, supply of

4. decreases, increases
5. increases, increases
6. decrease, increase
7. stays the same, increases
8. ceiling, floor
9. shortage, surplus
10. secondary, scalping

TRUE-FALSE QUESTIONS

- | | | |
|-----------------|-----------------|------------------|
| 1. T, p. 66 | 5. F, p. 67 | 9. F, p. 69 |
| 2. F, p. 66 | 6. F, pp. 68-69 | 10. T, pp. 69-70 |
| 3. T, pp. 66-67 | 7. T, pp. 68-69 | |
| 4. T, p. 67 | 8. T, p. 69 | |

MULTIPLE-CHOICE QUESTIONS

- | | | |
|-----------------|-----------------|------------------|
| 1. b, p. 66 | 6. d, p. 68 | 11. c, p. 69 |
| 2. b, p. 66 | 7. c, pp. 68-69 | 12. c, pp. 69-70 |
| 3. d, pp. 66-67 | 8. d, pp. 68-69 | 13. a, pp. 69-70 |
| 4. d, p. 67 | 9. b, pp. 69-70 | 14. c, pp. 69-70 |
| 5. b, p. 68 | 10. a, p. 69 | 15. b, p. 69 |

PROBLEMS

1. column 5 (quantity demanded): 20, 30, 40, 50, 60; column 6 (quantity supplied): 40, 30, 20, 10, 0; a. \$3.00, \$4.00; b. 30, 30
2. \$7, 15,000; a. shortage, 4,000; b. surplus, 2,000

SHORT ANSWER AND ESSAY QUESTIONS

- | | | |
|--------------|--------------|---------------|
| 1. p. 66 | 5. p. 68 | 9. p. 69 |
| 2. pp. 66-67 | 6. pp. 68-69 | 10. pp. 69-70 |
| 3. pp. 67-68 | 7. pp. 69-70 | |
| 4. pp. 67-68 | 8. p. 69 | |